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Nalco Docket No. 7628

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In the United States Patent and Trademark Office

Applicant: Michael J. Weiland, et al. ) **Appeal Brief in response to**  
Serial No: 09/966,912 ) **Notice of Non-Compliance**  
Date Filed: September 28, 2001 ) Examiner: Albert J. Gagliardi  
Group Art Unit: 2878  
Attorney Docket No.: 7628

For: METHOD OF TRACING DRAINS

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

- [X] **AUTHORIZATION TO PAY AND PETITION FOR THE ACCEPTANCE OF ANY NECESSARY FEES:** If any charges or fees must be paid in connection with the following Communication (including but not limited to the payment of issue fees), they may be paid out of our deposit account No. 14-0105. If this payment also requires a Petition, please construe this authorization to pay as the necessary Petition which is required to accompany the payment.
- [X] In the filing of this Appeal Brief on August 18, 2003, Applicants requested that our deposit account No. 14-0105 be charged in the amount of \$320 to cover the cost of "Filing a brief in support of an appeal." Therefore, Applicants honestly believe that no additional fee is required at this time to cover filing of this Appeal Brief in response to Notice of Non-Compliance. If Applicants are incorrect in their analysis than any deficiency or overpayment of fees for this Appeal Brief should be charged or credited to the above numbered deposit account. **A duplicate copy of this sheet is provided.**

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**37 C.F.R. 1.8**

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1/19/04  
Date

Robert T. Faedtke  
Robert T. Faedtke

**APPELLANT'S BRIEF UNDER 37 C.F.R. § 1.192**

Dear Sir:

This Brief is filed in response to the Notification of Non-Compliance with 37 CFR 1.192 (c) and is based on the original Appeal Brief, filed on August 21, 2003 which was further to the Notice of Appeal filed in this case on June 18, 2003.

**I REAL PARTY IN INTEREST**

As evidenced by the Assignment Document recorded on January 15, 2002 at Reel 012491, Frame 0954, Ondeo Nalco Company is the real party in interest in this appeal.

As evidenced by the attached papers, the name of Ondeo Nalco Company was changed to that of Nalco Company as of November 4, 2003. A recordation of this change in name was sent to the United States Patent and Trademark Office on December 30, 2003. Applicants have yet to have received a paper informing us that the change of name has been recorded. When Applicants receive such a paper, a copy of that notice will be sent to this appeal board.

## **II RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences that will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

### **III STATUS OF CLAIMS**

Claims 1-20 are currently pending. Claims 1-20 stand finally rejected in the Office Action dated March 26, 2003.

#### **IV STATUS OF AMENDMENTS**

Applicants' Response After Final Action, mailed June 18, 2003 was received by the USPTO mail room, as evidenced by the returned postcard, however, at the time the original Appellant's Brief was filed, in August of 2003, Applicants did not have a Communication from the Examiner in the case file as to whether this Response After Final Action was entered or considered by the Examiner.

In the Notification of Non-Compliance the following is stated: "Regarding the status of the Amendments, the examiner notes that no amendments after final rejection have been received or entered. The examiner notes that a response identified as a Response under 37 C.F.R. 1.111 (which was not considered by the Office as a Response after Final) was received on 23 June 2003. The response, even though not considered, did not contain any amendments. The examiner further notes that if the response had been considered, it would not have placed the application in condition for allowance."

## V SUMMARY OF INVENTION

Applicants' invention is a method of tracing drains in a building that begins with a comprehensive building survey in which all existing drains are numbered. A Master Blueprint and a Master Spreadsheet are created using information collected in the building survey. A tracer is used to determine the flow of storm water to and from the building's storm drains. A test location, consisting of a storm manhole or a sanitary manhole is then chosen and water is run continuously through this manhole. A non-toxic fluorescent tracer is added to the target sanitary drain and a sample of the water running through the test location is withdrawn. A fluorometer is used to detect the fluorescent signal of non-toxic fluorescent tracer in the sample of water withdrawn. This procedure is repeated until all test locations have been surveyed and the information recorded on the Master Blueprint and Master Spreadsheet. The information is used to reconfigure drains that are wrongly plumbed such that the replumbed drains are draining to the correct location.

This invention is described in the specification on pages 7-14 and in more detail on pages 15-38. The specific elements of the invention are described as follows:

*“surveying the building to locate all existing drains”*, **page 15, line 15 to page 16, lines 1-22**; page 7, line 4; page 9, line 3; page 11, line 4; page 13, line 3;

*“numbering all the existing drains”*, **page 18, lines 3-12**;  
page 7, line 5; page 9, line 4; page 11, line 5; page 13, line 4;

*“creating a Master Blueprint and a Master Spreadsheet showing all of the drains”* **Page 18, line 13 to page 21, line 9**; page 7, line 6; page 9, line 5; page 11, lines 6-7;

*“using a tracer to determine whether the storm water from the building actually flows from each storm drain to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet”* ;



**page 21, lines 10-23 to page 29, lines 1-3; page 7, lines 7-10, page 9, lines 6-9, page 11, lines 8-11;**

*“selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes”;*

**page 29, lines 4-10; page 7, lines 11-13, page 9, lines 10-12, page 11, lines 12-14;**

*“running water continuously through a drain that drains into the test location manhole selected in Step (5)”;*

**page 29, lines 11-23 to page 30, lines 1-7; and page 7, lines 14-15, page 9, lines 13-14, page 11, lines 15-16;**

*“selecting a target sanitary drain and adding an amount of non-toxic fluorescent tracer to the target sanitary drain, wherein the amount of non-toxic fluorescent tracer added is such that the fluorescent signal of non-toxic fluorescent tracer is detectable over the background fluorescence of the water in said sanitary drain”;* **page 30, lines 7-32, all of page 31 and page 32, lines 1-13; page 7, lines 16-19, page 9, lines 15-18, page 11, lines 17-21;**

*“using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5)”;* **page 32, line 14-23 and all of pages 33-34 and page 35, lines 1-16; page 7, lines 20-21, page 9, lines 19-20, and page 11, lines 22-23 and page 12, line 1;**

*“using the fluorescent signal to determine whether the target sanitary drain is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain on the Master Blueprint and on the Master Spreadsheet”*; **page 35, lines 17-22**, page 7, lines 22-23 and page 8, lines 1-2, page 9, lines 21-22 and page 10, lines 1-2 and page 12, lines 2-5

*“repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains are traced”*; **page 36, lines 1-2**; and page 8, lines 3-4, page 10, lines 3-4 and page 12, lines 6-7,

and

*“using the information from the Master Blueprint and Master Spreadsheet to determine where all sanitary drains and storm drains are draining”* **page 36, lines 3-4**, page 8, lines 5-6, page 10, lines 5-6, page 12, lines 8-10.

**VI ISSUE**

1. Whether Claims 1-20 should be rejected under 35 U.S.C. §103(a) as being unpatentable over Saniford et al. U.S. Patent No. 3,851,151 (hereinafter “Saniford”) in view of Azok U.S. Patent No. 5,352,277 (hereinafter “Azok”).

## **VII GROUPING OF CLAIMS**

Independent Claim 1, with dependent Claims 2, 3, 13 and 17; independent Claim 4 with dependent Claims 5, 6, 14 and 18; independent Claim 7 with dependent Claims 8, 9, 15 and 19; and independent Claim 10 with dependent Claims 11, 12, 16 and 20 stand together.

### VIII ARGUMENTS

A. The rejection of Claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over Saniford et al. U.S. Patent No. 3,851,151 (hereinafter “Saniford”) in view of Azok U.S. Patent No. 5,352,277 (hereinafter “Azok”) should be withdrawn.

At the outset of these remarks, Applicants feel it is important to respectfully state their position which is: Applicants have invented a new and nonobvious way of tracing drains in a building which provides for *a comprehensive understanding of where the storm and sanitary drains in a building are actually draining*, as compared to where they are “supposed-to-be” draining. In the event no piping blueprints are available, the method of the instant claimed invention enables people skilled in the art to actually create a viable, “snapshot” of how the pipes are currently configured and where each drain actually drains. The instant claimed invention is not simply a method of tracing drains using techniques that are well known in the art or that can be modified slightly from existing methods to teach or suggest the instant claimed invention. The utility of this invention is apparent for all personnel who work in the area of pipes and piping systems.

Further to the point, to the best of Applicants’ knowledge, **non-toxic fluorescent tracers, capable of being detected in the water from drains in a drainage system for *an entire building*, by using a *fluorometer*, rather than by using the color of the tracer to visibly locate the tracer in the water, have not been used to trace drains throughout a building in the manner described and claimed in the instant claimed patent application.**

A distinct, discernable and dramatic difference between the instant claimed invention and the invention taught and claimed in Saniford is that the desired outcome and processes studied in the instant claimed invention are the opposite of those described in Saniford. In the instant claimed

invention, the primary goal is to determine whether impermeable pipes making up a network of sanitary and storm drains in a building are connected correctly or whether they are incorrectly connected leading to undesired consequences. In Saniford, fluids are pumped under pressure into underground reservoirs to force out valuable materials, whereas in the instant claimed invention, water flows by gravity in and out of pipes that are both above and below ground. After leaks and drain system cross-connections are found, elimination of that leak is a step of the process claimed in dependent Claim 2. There is no analogous step of preventing unwanted flow in Saniford, rather in Saniford there is only the stated goal to increase fluid flow between two points. Therefore, the desired outcome and processes studied in the instant claimed invention are the opposite of those described above in Saniford and a person of ordinary skill in the art would not look to the teachings of Saniford to divine the elements of the instant claimed invention.

In contrast to the new and nonobvious method of the instant claimed invention, Saniford discusses tracing the flow of water through a *natural subterranean formation*, not through a *man-made building's storm and sanitary drainage* system. Even though Saniford does suggest that the invention could possibly be used to trace the origin of water from any source, Saniford does not provide enough information to enable a person of ordinary skill in the art to use a non-visible fluorescent tracer to trace water through pipes in a pipeline and sewer network throughout a building and record the information in a useful fashion .

In further contrast to the method of the instant claimed invention, Saniford does not use a fluorescent tracer, rather Saniford uses a “water-soluble substituted poly(hydroxyalkyl) bis (triazinylamino)stilbene” tracer which is detected by first exposing a sample of the water to an ultraviolet light causing the material to luminesce visibly. This visible luminescence is in line with standard “visible dye” tracing techniques which are well known in the art. In contrast to Saniford

the instant claimed invention uses a fluorescent tracer, which does not require an operator to make a visible evaluation as to whether the fluorescent tracer is present in the water sample. The lack of requirement for the use of visible detection methods is a huge advantage over the prior art and must be considered a useful, patentable invention.

Further to this point, the nature of the compounds which are suitable to be used as tracers are different in Saniford from those in the instant claimed invention. The differences are largely based on the nature of interferences encountered. This is very dependent upon the application area being measured and a chemistry or technique which is suitable in one area (e.g., subterranean flow tracing – Saniford) very likely will be unacceptable in another area (drain tracing – the instant claimed invention). The types of interferences encountered in the instant claimed invention, include, but are not limited to, high levels of suspended solids wherein these solids can be different in size and shape and chemical composition, oxidizing biocides, passage of leaking water through soil that may absorb some types of dyes and even rapidly changing flowrates. In Saniford, the most likely interferences to detection of the fluorescent signal of the tracer are crude oil, adsorption on rock surfaces, and the like (column 1, lines 28-31). Those interferences which determine what tracer materials and analytical methods are suitable are totally different than those encountered in drain tracing applications. Therefore, the conclusion reached is that there is no indication that the tracer materials listed or suitable for use in Saniford are acceptable for other applications and no criteria are provided to determine their specific suitability for use in the method of the instant claimed invention.

Saniford describes use of stilbene-based tracers through a rock formation with the stated goal being to find which locations are connected through flow patterns in large underground fluid bodies as the result of fluids specifically added (pumped under pressure) into that large underground fluid body (column 1, lines 5-20). The nature of these water-flood oil recovery systems is such that use of

only one tracer could produce interferences with itself due to overlapping flow patterns from different fluid injection and withdrawal points (column 1, lines 36-47). In the instant claimed invention, only one type of tracer is required to evaluate many thousands of drains.

Regarding the Examiners' conclusory statement that it would have been obvious for one skilled in the art to Survey a building, number the drains, create a Master Blueprint and a Master Plan and recording all information on them, Applicants respectfully disagree. These steps are not obvious items "tacked on" to ancient techniques in the art of tracing the flow of water, but rather all of these steps *are an integral part of the claimed process* that allows for a comprehensive survey of an entire building's storm and sanitary drains wherein the gathering of the information is conducted in such a way *as to make the information collected be in the most useful form possible* to the people seeking to understand the actual flow patterns of the drains in a particular building.

The analysis procedure used in the instant claimed invention is very different from that required in Saniford (column 1, line 35-68). The following discrete steps in analytical procedure are described in Saniford:

- Fluid sample has to be cleaned to remove crude oil and other types of interferences.
- Tracer from fluid samples is adsorbed onto filter paper in order to significantly increase the concentration of the tracer to make the tracer detectable to the unaided eye.
- The tracer concentration is measured on grab samples evaluated at a test bench.
- The tracer concentration is qualitatively estimated by visual comparison.
- A hand-held UV lamp is used to illuminate filter paper samples, which further makes results qualitative because level of luminescence is related to amount of light falling on samples (distance of lamp, angle of lamp and observation, etc.).

Saniford indicates this invention could be used for measuring flow of water through pipeline and a sewer network, ... or even from leakage of water from tanks, dams, pipelines, etc (column 4,



lines 1-5). However, based on the requirements to evaluate each sample, the Saniford invention would be unworkable in practice for use in evaluating the absence or presence of interconnections between sanitary and storm sewers. Large numbers of grab samples would be required per drain and many, many, many drains would need to be tested.

In contrast to the techniques described in Saniford, the instant claimed invention allows for the following:

- A detailed evaluation of system drawings and blueprints to distill thousands of possible sanitary drains and thousands of possible storm sewer drains/sampling points (millions of possible testing combinations) down into a tractable set of testing conditions for each sanitary/storm drain combination.
- The use of continuous sampling to ensure that rapid passage of tracer spike is not missed.
- The ability to make a quantitative measurement of tracer dosage to help determine the significance of a leak.
- The continuous monitoring and datalogging of fluorescence to further ensure that absence or presence of leakage is confirmed.

Therefore, based on the above discussion, Applicants do not feel that the invention described and claimed in Saniford should be used to render the instant claimed invention unpatentable and respectfully request the withdrawal of this rejection and that a Notice of Allowance be sent for all pending claims.

Azok teaches and claims a process for tracing liquid flow, comprising providing a dye-impregnated paper strip, putting the paper strip in water, having the colored tracing dye diffuse out of the paper strip into the water and then visually observing the flow of colored liquid within the vessel containing the water. The analysis of Azok is similar to that of Saniford in that one of the many reasons that Azok cannot be used to render the instant claimed invention obvious is that Azok provides a tracer material which requires a visual analytical method. Furthermore, Azok cannot be used to render the instant claimed invention obvious because Azok does not discuss and provide

solutions to the unique problems associated with determining the flow pattern of both storm and sanitary drains in an existing building.

Azok primarily describes the preparation of a dye-impregnated water soluble paper as a means of dispensing dyes. The use of paper strips to deliver tracers (Azok) is no part of the invention described and claimed in the instant patent application. This is highly advantageous in practicing the method of the instant claimed invention because many drains to be tested are located outside, on building roofs, and in the middle of large populated areas. The use of water soluble dye strips creates a significant risk of dye spills under certain circumstances – for example the dye strip may prematurely release dye if used when under raining or humid conditions. The presence of moisture on the hands of the person doing the testing may also create a situation where dye is released prematurely or in an undesirable way. In contrast, the method of the instant claimed invention can be conducted even during torrential rain storms because the use of liquid tracer solution allowed the studies to continue be carried on without risk of undesirable release of tracer dye.

Although Azok describes leak detection, it does not provide any consideration or guidance on key aspects such as interferences to use of certain tracer materials and/or analytical methods. For example, there is no indication in Azok of the need to use continuous sampling and continuous monitoring in order to ensure that the absence (or presence) of a leak or cross-connection between storm and sanitary drain lines is unequivocally determined, which is included in the instant claimed invention. For the most part the method of Azok has its greatest utility in very simplistic systems such as water leaking from the toilet reservoir into the bowl. This is very far removed from typical drain systems which contain multiple and (unwanted) overlapping drains, hundreds or more of pipes and hundreds or more of sampling points. This results in literally millions of possible testing

combinations. **Only the methods and procedures described in the instant claimed invention make surveying, evaluating, measuring, and fixing those systems possible.**

Based on the above discussion, Applicants do not feel that the invention described and claimed in Azok should be used to render the instant claimed invention unpatentable and respectfully request the withdrawal of this rejection and that a Notice of Allowance be sent for all pending claims.

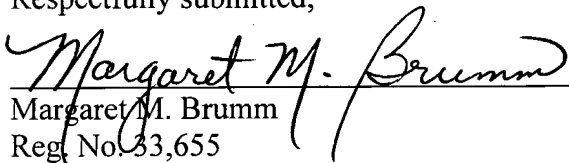
The Saniford and Azok patents are both in different search classification (Saniford in 250/259 and Azok in 8/506); therefore they are viewed by the USPTO as belonging to two separate areas of technology. Therefore, there is no suggestion in these two references to combine their teachings to teach or disclose the instant claimed invention. Furthermore, Applicants wish to respectfully make the point that it appears to them to be common sense to state that a person of ordinary skill in that area could not reasonably be expected to seek out such differently classified references and use them to develop the method of the instant claimed invention.

Even if these references were improperly combined, they still do not teach or suggest the instant claimed invention because there is no teaching in either reference separately or in both references when combined that suggests a method of tracing drains that provides solutions to the unique problems associated with determining the flow pattern of both storm and sanitary drains in an existing building.

**IX CONCLUSION**

In conclusion, Applicants do not feel that the inventions described and claimed in Saniford and in Azok can be used either separately or in combination to render the instant claimed invention patentably obvious and respectfully request the withdrawal of all rejections based on these references. Applicants also request that a Notice of Allowance be sent for all pending claims.

Respectfully submitted,

  
Margaret M. Brumm

Reg. No. 33,655

Patent & Licensing Department

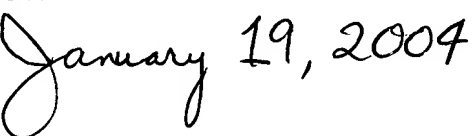
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**X APPENDIX OF CLAIMS**

1. A method of tracing drains in a building comprising:
  - (1) surveying the building to locate all existing drains;
  - (2) numbering all of the existing drains;
  - (3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains;
  - (4) using a tracer to determine whether the storm water from the building actually flows from each storm drain to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;
  - (5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;
  - (6) running water continuously through a drain that drains into the test location manhole selected in Step (5);
  - (7) selecting a target sanitary drain and adding an amount of non-toxic fluorescent tracer to the target sanitary drain, wherein the amount of non-toxic fluorescent tracer added is such that the fluorescent signal of non-toxic fluorescent tracer is detectable over the background fluorescence of the water in said sanitary drain;
  - (8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5);
  - (9) using the fluorescent signal to determine whether the target sanitary drain is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain on the Master Blueprint and on the Master Spreadsheet;

- (10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains are traced; and
  - (11) using the information from the Master Blueprint and Master Spreadsheet to determine where all sanitary drains and storm drains are draining.
2. The method of Claim 1 further comprising:
- (12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.
3. The method of Claim 2 further comprising:
- (13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.
4. A method of tracing drains in a building comprising:
- (1) surveying the building to locate all existing drains;
  - (2) numbering all of the existing drains;
  - (3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains;
  - (4) using a tracer to determine whether the storm water from the building actually flows from each storm drain to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;
  - (5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;
  - (6) running water continuously through a drain that drains into the test location manhole selected in Step (5);

- (7) selecting a target sanitary drain and adding an amount of non-toxic fluorescent tracer to the target sanitary drain, wherein the amount of non-toxic fluorescent tracer added is such that the concentration of non-toxic fluorescent tracer is at least about 600 ppm in the water in said target sanitary drain;
- (8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5);
- (9) using the fluorescent signal to determine whether the target sanitary drain is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain on the Master Blueprint and on the Master Spreadsheet;
- (10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains are traced; and
- (11) using the information from the Master Blueprint and Master Spreadsheet to determine where all sanitary drains and storm drains are draining.

5. The method of Claim 4 further comprising:

- (12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.

6. The method of Claim 5 further comprising:

- (13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.

7. A method of tracing drains of interest in a building comprising:
  - (1) surveying the building to locate the drains of interest;
  - (2) numbering all of the drains of interest;
  - (3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains of interest;
  - (4) using a tracer to determine whether the storm water from the building actually flows from the storm drains of interest to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;
  - (5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;
  - (6) running water continuously through a drain that drains into the test location manhole selected in Step (5);
  - (7) selecting a target sanitary drain of interest and adding an amount of non-toxic fluorescent tracer to the target sanitary drain of interest, wherein the amount of non-toxic fluorescent tracer added is such that the fluorescent signal of non-toxic fluorescent tracer is detectable over the background fluorescence of the water in said target sanitary drain of interest;
  - (8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5);
  - (9) using the fluorescent signal to determine whether the target sanitary drain of interest is draining to the test location selected in Step (5) and recording the information determined about the flow



pattern of said target sanitary drain of interest on the Master Blueprint and on the Master Spreadsheet;

- (10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains of interest are traced; and
- (11) using the information from the Master Blueprint and Master Spreadsheet to determine where the sanitary drains of interest and the storm drains of interest, are draining.

8. The method of Claim 7 further comprising:
  - (12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.
9. The method of Claim 8 further comprising:
  - (13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.
10. A method of tracing drains of interest in a building comprising:
  - (1) surveying the building to locate the drains of interest;
  - (2) numbering all of the drains of interest;
  - (3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains of interest;
  - (4) using a tracer to determine whether the storm water from the building actually flows from the storm drains of interest to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;
  - (5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;
  - (6) running water continuously through a drain that drains into the test location manhole selected in Step (5);
  - (7) selecting a target sanitary drain of interest and adding an amount of non-toxic fluorescent tracer to the target sanitary drain of interest, wherein the amount of non-toxic fluorescent tracer added

is such that the concentration of non-toxic fluorescent tracer is at least about 600 ppm in the water in said target sanitary drain of interest;

- (8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer from the sample of water withdrawn at the test location selected in Step (5);
- (9) using the fluorescent signal to determine whether the target sanitary drain of interest is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain of interest on the Master Blueprint and on the Master Spreadsheet;
- (10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains of interest are traced;
- (11) using the information from the Master Blueprint and Master Spreadsheet to determine where the sanitary drains of interest and the storm drains of interest are draining.

11. The method of Claim 10 further comprising:

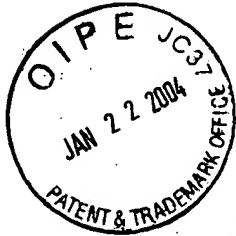
- (12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.

12. The method of Claim 11 further comprising:

- (13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.

13. The method of Claim 1 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.

14. The method of Claim 4 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.
15. The method of Claim 7 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.
16. The method of Claim 10 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.
17. The method of Claim 1 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.
18. The method of Claim 4 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.
19. The method of Claim 7 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.
20. The method of Claim 10 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.



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| <input type="checkbox"/> Patent Application                      | <input type="checkbox"/> Amendment                     |
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| <input type="checkbox"/> Drawing(s) _____ sheets (F) _____ (INF) |  |

☒ Other CHANGE OF NAME AND ADDRESS FROM AND TO NALCO COMPANY

Serial No. 09/966,912 Case No. 7628

Applicant: MICHAEL J. WEILAND, JOHN E. HOOTS

Filed on: SEPTEMBER 28, 2001

For: METHOD OF TRACING DRAINS

Deposit Account Number: 14-0105 Date Due: \_\_\_\_\_ Date Sent: 12/30/03  
ADV-676 (10-02)

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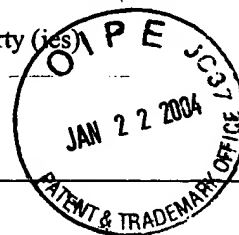
Ondeo Nalco Company

Additional names(s) of conveying party (ies) attached? Yes ☐ No ☒

2. Name and address of receiving party (ies)

Name: Nalco Company

Internal Address: \_\_\_\_\_



3. Nature of conveyance:

Assignment

Merger

Security Agreement

☒ Change of Name

Other \_\_\_\_\_

Execution Date: November 4, 2003

Street Address: 1601 W. Diehl Road

City: Naperville State: IL ZIP: 60563-1198

Additional names(s) & address(es) attached? Yes ☐ No ☒

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s):

**09/966,912**

B. Patent No.(s)

Additional numbers attached: Yes ☐ No ☒

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Margaret M. Brumm

Patent and Licensing Dept.

Internal Address: Nalco Company

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41) ..... \$40.00

Enclosed

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Street Address: 1601 W. Diehl Road

8. Deposit account number: 14-0105

City: Naperville State: Illinois ZIP: 60563-1198

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Margaret M. Brumm Reg No. 33,655

Name of Person Signing

Margaret M. Brumm  
Signature

December 30, 2003  
Date

Total number of pages including cover sheet, attachments, and document:

Mail documents to be recorded with required cover sheet information to:

Commissioner for Patents, P.O Box 1450

Alexandria, VA 22313-1450

# Delaware

PAGE 1

*The First State*

I, HARRIET SMITH WINDSOR, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "ONDEO NALCO COMPANY", CHANGING ITS NAME FROM "ONDEO NALCO COMPANY" TO "NALCO COMPANY", FILED IN THIS OFFICE ON THE FOURTH DAY OF NOVEMBER, A.D. 2003, AT 12:32 O'CLOCK P.M.

A FILED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS.



*Harriet Smith Windsor*

Harriet Smith Windsor, Secretary of State

0234821 8100

AUTHENTICATION: 2728609

030706660

DATE: 11-04-03

State of Delaware  
Secretary of State  
Division of Corporations  
Delivered 12:35 PM 11/04/2003  
FILED 12:32 PM 11/04/2003  
SRV 030706660 - 0234821 FILE

**CERTIFICATE OF AMENDMENT  
OF THE  
RESTATED CERTIFICATE OF INCORPORATION  
OF  
ONDEO NALCO COMPANY**

Adopted in accordance with the provisions  
of Section 242 of the General Corporation  
Law of the State of Delaware

The undersigned, being the Assistant Secretary of ONDEO Nalco Company (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "GCL"), does hereby certify:

1. That the Restated Certificate of Incorporation of the Corporation is hereby amended by changing Article FIRST thereof so that, as amended, said Article FIRST shall read in its entirety as follows:

"FIRST: The name of the Corporation is Nalco Company."

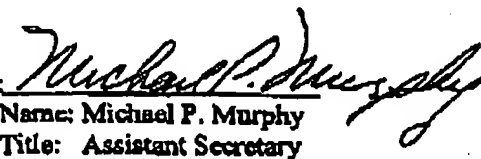
2. That the foregoing amendment of the Restated Certificate of Incorporation of the Corporation has been duly adopted in accordance with Section 242 of the GCL.

3. That the Board of Directors of the Corporation duly adopted resolutions setting forth the foregoing amendment, declaring said amendment to be advisable and referring such amendment to the stockholders of the Corporation for consideration thereof.

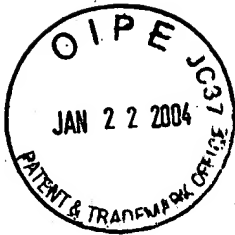
4. That the foregoing amendment has been duly approved and adopted in accordance with the provisions of the GCL by the written consent of the sole stockholder of the Corporation on November 4, 2003 in accordance with the provisions of Section 228 of the GCL.

IN WITNESS WHEREOF, the undersigned has caused this Certificate to be signed this 4th day of November 2003.

ONDEO NALCO COMPANY

By:   
Name: Michael P. Murphy  
Title: Assistant Secretary





In the United States Patent and Trademark Office

Applicant: Michael J. Weiland, et al. )  
Serial No: 09/966,912 )  
Date Filed: September 28, 2001 )

**Appeal Brief in response to  
Notice of Non-Compliance**  
Examiner: Albert J. Gagliardi  
Group Art Unit: 2878  
Attorney Docket No.: 7628

For: METHOD OF TRACING DRAINS

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**[X] AUTHORIZATION TO PAY AND PETITION FOR THE ACCEPTANCE OF ANY  
NECESSARY FEES:** If any charges or fees must be paid in connection with the following  
Communication (including but not limited to the payment of issue fees), they may be paid out of our  
deposit account No. 14-0105. If this payment also requires a Petition, please construe this  
authorization to pay as the necessary Petition which is required to accompany the payment.

**[X]** In the filing of this Appeal Brief on August 18, 2003, Applicants requested that our deposit account  
No. 14-0105 be charged in the amount of \$320 to cover the cost of "Filing a brief in support of an  
appeal." Therefore, Applicants honestly believe that no additional fee is required at this time to cover  
filing of this Appeal Brief in response to Notice of Non-Compliance. If Applicants are incorrect in  
their analysis than any deficiency or overpayment of fees for this Appeal Brief should be charged or  
credited to the above numbered deposit account. **A duplicate copy of this sheet is provided.**

**CERTIFICATE OF MAILING  
37 C.F.R. 1.8**

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1/19/04  
Date

Robert T. Faedtker  
Robert T. Faedtker

**APPELLANT'S BRIEF UNDER 37 C.F.R. § 1.192**

Dear Sir:

This Brief is filed in response to the Notification of Non-Compliance with 37 CFR 1.192 (c) and is based on the original Appeal Brief, filed on August 21, 2003 which was further to the Notice of Appeal filed in this case on June 18, 2003.

**I REAL PARTY IN INTEREST**

As evidenced by the Assignment Document recorded on January 15, 2002 at Reel 012491, Frame 0954, Ondeo Nalco Company is the real party in interest in this appeal.

As evidenced by the attached papers, the name of Ondeo Nalco Company was changed to that of Nalco Company as of November 4, 2003. A recordation of this change in name was sent to the United States Patent and Trademark Office on December 30, 2003. Applicants have yet to have received a paper informing us that the change of name has been recorded. When Applicants receive such a paper, a copy of that notice will be sent to this appeal board.

## **II RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences that will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

### **III STATUS OF CLAIMS**

Claims 1-20 are currently pending. Claims 1-20 stand finally rejected in the Office Action dated March 26, 2003.

#### **IV STATUS OF AMENDMENTS**

Applicants' Response After Final Action, mailed June 18, 2003 was received by the USPTO mail room, as evidenced by the returned postcard, however, at the time the original Appellant's Brief was filed, in August of 2003, Applicants did not have a Communication from the Examiner in the case file as to whether this Response After Final Action was entered or considered by the Examiner.

In the Notification of Non-Compliance the following is stated: "Regarding the status of the Amendments, the examiner notes that no amendments after final rejection have been received or entered. The examiner notes that a response identified as a Response under 37 C.F.R. 1.111 (which was not considered by the Office as a Response after Final) was received on 23 June 2003. The response, even though not considered, did not contain any amendments. The examiner further notes that if the response had been considered, it would not have placed the application in condition for allowance."

## V SUMMARY OF INVENTION

Applicants' invention is a method of tracing drains in a building that begins with a comprehensive building survey in which all existing drains are numbered. A Master Blueprint and a Master Spreadsheet are created using information collected in the building survey. A tracer is used to determine the flow of storm water to and from the building's storm drains. A test location, consisting of a storm manhole or a sanitary manhole is then chosen and water is run continuously through this manhole. A non-toxic fluorescent tracer is added to the target sanitary drain and a sample of the water running through the test location is withdrawn. A fluorometer is used to detect the fluorescent signal of non-toxic fluorescent tracer in the sample of water withdrawn. This procedure is repeated until all test locations have been surveyed and the information recorded on the Master Blueprint and Master Spreadsheet. The information is used to reconfigure drains that are wrongly plumbed such that the replumbed drains are draining to the correct location.

This invention is described in the specification on pages 7-14 and in more detail on pages 15-38. The specific elements of the invention are described as follows:

*"surveying the building to locate all existing drains", page 15, line 15 to page 16, lines 1-22; page 7, line 4; page 9, line 3; page 11, line 4; page 13, line 3;*

*"numbering all the existing drains", page 18, lines 3-12;*  
*page 7, line 5; page 9, line 4; page 11, line 5; page 13, line 4;*

*"creating a Master Blueprint and a Master Spreadsheet showing all of the drains" Page 18, line 13 to page 21, line 9; page 7, line 6; page 9, line 5; page 11, lines 6-7;*

*"using a tracer to determine whether the storm water from the building actually flows from each storm drain to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet" ;*

page 21, lines 10-23 to page 29, lines 1-3; page 7, lines 7-10, page 9, lines 6-9, page 11, lines 8-11;

*“selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes”;*

page 29, lines 4-10; page 7, lines 11-13, page 9, lines 10-12, page 11, lines 12-14;

*“running water continuously through a drain that drains into the test location manhole selected in Step (5)”;*

page 29, lines 11-23 to page 30, lines 1-7; and page 7, lines 14-15, page 9, lines 13-14, page 11, lines 15-16;

*“selecting a target sanitary drain and adding an amount of non-toxic fluorescent tracer to the target sanitary drain, wherein the amount of non-toxic fluorescent tracer added is such that the fluorescent signal of non-toxic fluorescent tracer is detectable over the background fluorescence of the water in said sanitary drain”;* page 30, lines 7-32, all of page 31 and page 32, lines 1-13; page 7, lines 16-19, page 9, lines 15-18, page 11, lines 17-21;

*“using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5)”;* page 32, line 14-23 and all of pages 33-34 and page 35, lines 1-16; page 7, lines 20-21, page 9, lines 19-20, and page 11, lines 22-23 and page 12, line 1;



*“using the fluorescent signal to determine whether the target sanitary drain is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain on the Master Blueprint and on the Master Spreadsheet”*; **page 35, lines 17-22**, page 7, lines 22-23 and page 8, lines 1-2, page 9, lines 21-22 and page 10, lines 1-2 and page 12, lines 2-5

*“repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains are traced”*; **page 36, lines 1-2**; and page 8, lines 3-4, page 10, lines 3-4 and page 12, lines 6-7,

and

*“using the information from the Master Blueprint and Master Spreadsheet to determine where all sanitary drains and storm drains are draining”* **page 36, lines 3-4**, page 8, lines 5-6, page 10, lines 5-6, page 12, lines 8-10.

**VI ISSUE**

1. Whether Claims 1-20 should be rejected under 35 U.S.C. §103(a) as being unpatentable over Saniford et al. U.S. Patent No. 3,851,151 (hereinafter "Saniford") in view of Azok U.S. Patent No. 5,352,277 (hereinafter "Azok").

## **VII GROUPING OF CLAIMS**

Independent Claim 1, with dependent Claims 2, 3, 13 and 17; independent Claim 4 with dependent Claims 5, 6, 14 and 18; independent Claim 7 with dependent Claims 8, 9, 15 and 19; and independent Claim 10 with dependent Claims 11, 12, 16 and 20 stand together.

### VIII ARGUMENTS

- A. The rejection of Claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over Saniford et al. U.S. Patent No. 3,851,151 (hereinafter "Saniford") in view of Azok U.S. Patent No. 5,352,277 (hereinafter "Azok") should be withdrawn.

At the outset of these remarks, Applicants feel it is important to respectfully state their position which is: Applicants have invented a new and nonobvious way of tracing drains in a building which provides for *a comprehensive understanding of where the storm and sanitary drains in a building are actually draining*, as compared to where they are "supposed-to-be" draining. In the event no piping blueprints are available, the method of the instant claimed invention enables people skilled in the art to actually create a viable, "snapshot" of how the pipes are currently configured and where each drain actually drains. The instant claimed invention is not simply a method of tracing drains using techniques that are well known in the art or that can be modified slightly from existing methods to teach or suggest the instant claimed invention. The utility of this invention is apparent for all personnel who work in the area of pipes and piping systems.

Further to the point, to the best of Applicants' knowledge, **non-toxic fluorescent tracers, capable of being detected in the water from drains in a drainage system for *an entire building*, by using a *fluorometer*, rather than by using the color of the tracer to visibly locate the tracer in the water, have not been used to trace drains throughout a building in the manner described and claimed in the instant claimed patent application.**

A distinct, discernable and dramatic difference between the instant claimed invention and the invention taught and claimed in Saniford is that the desired outcome and processes studied in the instant claimed invention are the opposite of those described in Saniford. In the instant claimed

invention, the primary goal is to determine whether impermeable pipes making up a network of sanitary and storm drains in a building are connected correctly or whether they are incorrectly connected leading to undesired consequences. In Saniford, fluids are pumped under pressure into underground reservoirs to force out valuable materials, whereas in the instant claimed invention, water flows by gravity in and out of pipes that are both above and below ground. After leaks and drain system cross-connections are found, elimination of that leak is a step of the process claimed in dependent Claim 2. There is no analogous step of preventing unwanted flow in Saniford, rather in Saniford there is only the stated goal to increase fluid flow between two points. Therefore, the desired outcome and processes studied in the instant claimed invention are the opposite of those described above in Saniford and a person of ordinary skill in the art would not look to the teachings of Saniford to divine the elements of the instant claimed invention.

In contrast to the new and nonobvious method of the instant claimed invention, Saniford discusses tracing the flow of water through a *natural subterranean formation*, not through a *man-made building's storm and sanitary drainage system*. Even though Saniford does suggest that the invention could possibly be used to trace the origin of water from any source, Saniford does not provide enough information to enable a person of ordinary skill in the art to use a non-visible fluorescent tracer to trace water through pipes in a pipeline and sewer network throughout a building and record the information in a useful fashion .

In further contrast to the method of the instant claimed invention, Saniford does not use a fluorescent tracer, rather Saniford uses a "water-soluble substituted poly(hydroxyalkyl) bis (triazinylamino)stilbene" tracer which is detected by first exposing a sample of the water to an ultraviolet light causing the material to luminesce visibly. This visible luminescence is in line with standard "visible dye" tracing techniques which are well known in the art. In contrast to Saniford

the instant claimed invention uses a fluorescent tracer, which does not require an operator to make a visible evaluation as to whether the fluorescent tracer is present in the water sample. The lack of requirement for the use of visible detection methods is a huge advantage over the prior art and must be considered a useful, patentable invention.

Further to this point, the nature of the compounds which are suitable to be used as tracers are different in Saniford from those in the instant claimed invention. The differences are largely based on the nature of interferences encountered. This is very dependent upon the application area being measured and a chemistry or technique which is suitable in one area (e.g., subterranean flow tracing – Saniford) very likely will be unacceptable in another area (drain tracing – the instant claimed invention). The types of interferences encountered in the instant claimed invention, include, but are not limited to, high levels of suspended solids wherein these solids can be different in size and shape and chemical composition, oxidizing biocides, passage of leaking water through soil that may absorb some types of dyes and even rapidly changing flowrates. In Saniford, the most likely interferences to detection of the fluorescent signal of the tracer are crude oil, adsorption on rock surfaces, and the like (column 1, lines 28-31). Those interferences which determine what tracer materials and analytical methods are suitable are totally different than those encountered in drain tracing applications. Therefore, the conclusion reached is that there is no indication that the tracer materials listed or suitable for use in Saniford are acceptable for other applications and no criteria are provided to determine there specific suitability for use in the method of the instant claimed invention.

Saniford describes use of stilbene-based tracers through a rock formation with the stated goal being to find which locations are connected through flow patterns in large underground fluid bodies as the result of fluids specifically added (pumped under pressure) into that large underground fluid body (column 1, lines 5-20). The nature of these water-flood oil recovery systems is such that use of

only one tracer could produce interferences with itself due to overlapping flow patterns from different fluid injection and withdrawal points (column 1, lines 36-47). In the instant claimed invention, only one type of tracer is required to evaluate many thousands of drains.

Regarding the Examiners' conclusory statement that it would have been obvious for one skilled in the art to Survey a building, number the drains, create a Master Blueprint and a Master Plan and recording all information on them, Applicants respectfully disagree. These steps are not obvious items "tacked on" to ancient techniques in the art of tracing the flow of water, but rather all of these steps *are an integral part of the claimed process* that allows for a comprehensive survey of an entire building's storm and sanitary drains wherein the gathering of the information is conducted in such a way *as to make the information collected be in the most useful form possible* to the people seeking to understand the actual flow patterns of the drains in a particular building.

The analysis procedure used in the instant claimed invention is very different from that required in Saniford (column 1, line 35-68). The following discrete steps in analytical procedure are described in Saniford:

- Fluid sample has to be cleaned to remove crude oil and other types of interferences.
- Tracer from fluid samples is adsorbed onto filter paper in order to significantly increase the concentration of the tracer to make the tracer detectable to the unaided eye.
- The tracer concentration is measured on grab samples evaluated at a test bench.
- The tracer concentration is qualitatively estimated by visual comparison.
- A hand-held UV lamp is used to illuminate filter paper samples, which further makes results qualitative because level of luminescence is related to amount of light falling on samples (distance of lamp, angle of lamp and observation, etc.).

Saniford indicates this invention could be used for measuring flow of water through pipeline and a sewer network, ... or even from leakage of water from tanks, dams, pipelines, etc (column 4,

lines 1-5). However, based on the requirements to evaluate each sample, the Saniford invention would be unworkable in practice for use in evaluating the absence or presence of interconnections between sanitary and storm sewers. Large numbers of grab samples would be required per drain and many, many, many drains would need to be tested.

In contrast to the techniques described in Saniford, the instant claimed invention allows for the following:

- A detailed evaluation of system drawings and blueprints to distill thousands of possible sanitary drains and thousands of possible storm sewer drains/sampling points (millions of possible testing combinations) down into a tractable set of testing conditions for each sanitary/storm drain combination.
- The use of continuous sampling to ensure that rapid passage of tracer spike is not missed.
- The ability to make a quantitative measurement of tracer dosage to help determine the significance of a leak.
- The continuous monitoring and datalogging of fluorescence to further ensure that absence or presence of leakage is confirmed.

Therefore, based on the above discussion, Applicants do not feel that the invention described and claimed in Saniford should be used to render the instant claimed invention unpatentable and respectfully request the withdrawal of this rejection and that a Notice of Allowance be sent for all pending claims.

Azok teaches and claims a process for tracing liquid flow, comprising providing a dye-impregnated paper strip, putting the paper strip in water, having the colored tracing dye diffuse out of the paper strip into the water and then visually observing the flow of colored liquid within the vessel containing the water. The analysis of Azok is similar to that of Saniford in that one of the many reasons that Azok cannot be used to render the instant claimed invention obvious is that Azok provides a tracer material which requires a visual analytical method. Furthermore, Azok cannot be used to render the instant claimed invention obvious because Azok does not discuss and provide



solutions to the unique problems associated with determining the flow pattern of both storm and sanitary drains in an existing building.

Azok primarily describes the preparation of a dye-impregnated water soluble paper as a means of dispensing dyes. The use of paper strips to deliver tracers (Azok) is no part of the invention described and claimed in the instant patent application. This is highly advantageous in practicing the method of the instant claimed invention because many drains to be tested are located outside, on building roofs, and in the middle of large populated areas. The use of water soluble dye strips creates a significant risk of dye spills under certain circumstances – for example the dye strip may prematurely release dye if used when under raining or humid conditions. The presence of moisture on the hands of the person doing the testing may also create a situation where dye is released prematurely or in an undesirable way. In contrast, the method of the instant claimed invention can be conducted even during torrential rain storms because the use of liquid tracer solution allowed the studies to continue be carried on without risk of undesirable release of tracer dye.

Although Azok describes leak detection, it does not provide any consideration or guidance on key aspects such as interferences to use of certain tracer materials and/or analytical methods. For example, there is no indication in Azok of the need to use continuous sampling and continuous monitoring in order to ensure that the absence (or presence) of a leak or cross-connection between storm and sanitary drain lines is unequivocally determined, which is included in the instant claimed invention. For the most part the method of Azok has its greatest utility in very simplistic systems such as water leaking from the toilet reservoir into the bowl. This is very far removed from typical drain systems which contain multiple and (unwanted) overlapping drains, hundreds or more of pipes and hundreds or more of sampling points. This results in literally millions of possible testing

combinations. **Only the methods and procedures described in the instant claimed invention make surveying, evaluating, measuring, and fixing those systems possible.**

Based on the above discussion, Applicants do not feel that the invention described and claimed in Azok should be used to render the instant claimed invention unpatentable and respectfully request the withdrawal of this rejection and that a Notice of Allowance be sent for all pending claims.

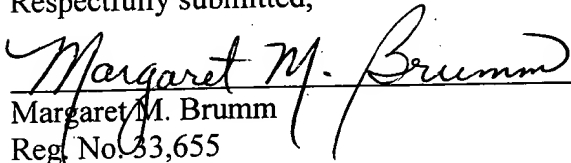
The Saniford and Azok patents are both in different search classification (Saniford in 250/259 and Azok in 8/506); therefore they are viewed by the USPTO as belonging to two separate areas of technology. Therefore, there is no suggestion in these two references to combine their teachings to teach or disclose the instant claimed invention. Furthermore, Applicants wish to respectfully make the point that it appears to them to be common sense to state that a person of ordinary skill in that area could not reasonably be expected to seek out such differently classified references and use them to develop the method of the instant claimed invention.

Even if these references were improperly combined, they still do not teach or suggest the instant claimed invention because there is no teaching in either reference separately or in both references when combined that suggests a method of tracing drains that provides solutions to the unique problems associated with determining the flow pattern of both storm and sanitary drains in an existing building.

**IX. CONCLUSION**

In conclusion, Applicants do not feel that the inventions described and claimed in Saniford and in Azok can be used either separately or in combination to render the instant claimed invention patentably obvious and respectfully request the withdrawal of all rejections based on these references. Applicants also request that a Notice of Allowance be sent for all pending claims.

Respectfully submitted,

  
Margaret M. Brumm

Reg. No. 33,655

Patent & Licensing Department

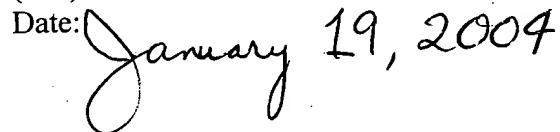
Nalco Company

1601 W. Diehl Road

Naperville, Illinois 60563-1198

(630) 305-1423

Date:



**X APPENDIX OF CLAIMS**

1. A method of tracing drains in a building comprising:
  - (1) surveying the building to locate all existing drains;
  - (2) numbering all of the existing drains;
  - (3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains;
  - (4) using a tracer to determine whether the storm water from the building actually flows from each storm drain to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;
  - (5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;
  - (6) running water continuously through a drain that drains into the test location manhole selected in Step (5);
  - (7) selecting a target sanitary drain and adding an amount of non-toxic fluorescent tracer to the target sanitary drain, wherein the amount of non-toxic fluorescent tracer added is such that the fluorescent signal of non-toxic fluorescent tracer is detectable over the background fluorescence of the water in said sanitary drain;
  - (8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5);
  - (9) using the fluorescent signal to determine whether the target sanitary drain is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain on the Master Blueprint and on the Master Spreadsheet;

- (10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains are traced; and
- (11) using the information from the Master Blueprint and Master Spreadsheet to determine where all sanitary drains and storm drains are draining.

2. The method of Claim 1 further comprising:

- (12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.

3. The method of Claim 2 further comprising:

- (13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.

4. A method of tracing drains in a building comprising:

- (1) surveying the building to locate all existing drains;
- (2) numbering all of the existing drains;
- (3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains;
- (4) using a tracer to determine whether the storm water from the building actually flows from each storm drain to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;
- (5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;
- (6) running water continuously through a drain that drains into the test location manhole selected in Step (5);

- (7) selecting a target sanitary drain and adding an amount of non-toxic fluorescent tracer to the target sanitary drain, wherein the amount of non-toxic fluorescent tracer added is such that the concentration of non-toxic fluorescent tracer is at least about 600 ppm in the water in said target sanitary drain;
- (8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5);
- (9) using the fluorescent signal to determine whether the target sanitary drain is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain on the Master Blueprint and on the Master Spreadsheet;
- (10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains are traced; and
- (11) using the information from the Master Blueprint and Master Spreadsheet to determine where all sanitary drains and storm drains are draining.

5. The method of Claim 4 further comprising:

- (12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.

6. The method of Claim 5 further comprising:

- (13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.

7. A method of tracing drains of interest in a building comprising:

- (1) surveying the building to locate the drains of interest;
- (2) numbering all of the drains of interest;
- (3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains of interest;
- (4) using a tracer to determine whether the storm water from the building actually flows from the storm drains of interest to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;
- (5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;
- (6) running water continuously through a drain that drains into the test location manhole selected in Step (5);
- (7) selecting a target sanitary drain of interest and adding an amount of non-toxic fluorescent tracer to the target sanitary drain of interest, wherein the amount of non-toxic fluorescent tracer added is such that the fluorescent signal of non-toxic fluorescent tracer is detectable over the background fluorescence of the water in said target sanitary drain of interest;
- (8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer in the sample of water withdrawn at the test location selected in Step (5);
- (9) using the fluorescent signal to determine whether the target sanitary drain of interest is draining to the test location selected in Step (5) and recording the information determined about the flow

pattern of said target sanitary drain of interest on the Master Blueprint and on the Master Spreadsheet;

- (10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains of interest are traced; and
- (11) using the information from the Master Blueprint and Master Spreadsheet to determine where the sanitary drains of interest and the storm drains of interest, are draining.



8. The method of Claim 7 further comprising:

(12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.

9. The method of Claim 8 further comprising:

(13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.

10. A method of tracing drains of interest in a building comprising:

(1) surveying the building to locate the drains of interest;

(2) numbering all of the drains of interest;

(3) creating a Master Blueprint and a Master Spreadsheet showing all of the drains of interest;

(4) using a tracer to determine whether the storm water from the building actually flows from the storm drains of interest to the storm water manhole and recording the information determined about the flow pattern of each storm drain tested on the Master Blueprint and on the Master Spreadsheet;

(5) selecting the test location to withdraw the sample of water, wherein said test location is selected from the group consisting of all storm manholes and all sanitary manholes;

(6) running water continuously through a drain that drains into the test location manhole selected in Step (5);

(7) selecting a target sanitary drain of interest and adding an amount of non-toxic fluorescent tracer to the target sanitary drain of interest, wherein the amount of non-toxic fluorescent tracer added

is such that the concentration of non-toxic fluorescent tracer is at least about 600 ppm in the water in said target sanitary drain of interest;

- (8) using a fluorometer to detect the fluorescent signal of said non-toxic fluorescent tracer from the sample of water withdrawn at the test location selected in Step (5);
- (9) using the fluorescent signal to determine whether the target sanitary drain of interest is draining to the test location selected in Step (5) and recording the information determined about the flow pattern of said target sanitary drain of interest on the Master Blueprint and on the Master Spreadsheet;
- (10) repeating Steps (4), (5), (6), (7), (8) and (9) as necessary such that all sanitary drains of interest are traced;
- (11) using the information from the Master Blueprint and Master Spreadsheet to determine where the sanitary drains of interest and the storm drains of interest are draining.

11. The method of Claim 10 further comprising:

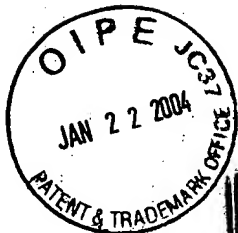
- (12) effecting repairs to the building such that the drains tested are configured such that they drain to their intended location.

12. The method of Claim 11 further comprising:

- (13) retesting the drains using the method of Steps (4) through (11) to ensure that all drains are now draining to their intended location.

13. The method of Claim 1 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.

14. The method of Claim 4 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.
15. The method of Claim 7 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.
16. The method of Claim 10 in which the tracer used in Step (4) is a visible dye tracer and the non-toxic fluorescent tracer used in Step (7) is selected from the group consisting of 1,3,6,8-pyrenetetrasulfonic acid, tetrasodium salt and 1,5-naphthalenedisulfonic acid, disodium salt.
17. The method of Claim 1 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.
18. The method of Claim 4 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.
19. The method of Claim 7 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.
20. The method of Claim 10 in which the drain chosen in Step (6) to run water continuously through is the drain that takes the longest amount of time to drain to the test location manhole.



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☒ Other CHANGE OF NAME AND ADDRESS FROM ANDEO NALCO COMPANY TO NALCO COMPANY

Serial No. 09/966,912 Case No. 7628

Applicant: MICHAEL J. WEILAND, JOHN E. HOOTS

Filed on: SEPTEMBER 28, 2001

For: METHOD OF TRACING DRAINS

Deposit Account Number: 14-0105 Date Due: \_\_\_\_\_ Date Sent: 12/30/03

ADV-676 (10-02)

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PATENTS ONLY

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Ondeo Nalco Company

Additional names(s) of conveying party (ies) attached? Yes ☐ No ☒

3. Nature of conveyance:

Assignment

Merger

Security Agreement

X Change of Name

Other \_\_\_\_\_

Execution Date: November 4, 2003

2. Name and address of receiving party (ies)

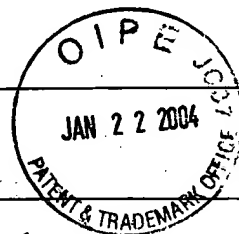
Name: Nalco Company

Internal Address: \_\_\_\_\_

Street Address: 1601 W. Diehl Road

City: Naperville State: IL ZIP: 60563-1198

Additional names(s) & address(es) attached? Yes ☐ No ☒



4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s):

**09/966,912**

B. Patent No.(s)

Additional numbers attached: Yes ☐ No ☒

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Margaret M. Brumm

Patent and Licensing Dept.

Internal Address: Nalco Company

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41) ..... \$40.00

Enclosed

X Authorized to be charged to deposit account

Street Address: 1601 W. Diehl Road

8. Deposit account number: 14-0105

City: Naperville State: Illinois ZIP: 60563-1198

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Margaret M. Brumm Reg No. 33.655

Name of Person Signing

Margaret M. Brumm  
Signature

December 30, 2003  
Date

Total number of pages including cover sheet, attachments, and document:

Mail documents to be recorded with required cover sheet information to:  
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Alexandria, VA 22313-1450

# Delaware

PAGE 1

## *The First State*

I, HARRIET SMITH WINDSOR, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "ONDEO NALCO COMPANY", CHANGING ITS NAME FROM "ONDEO NALCO COMPANY" TO "NALCO COMPANY", FILED IN THIS OFFICE ON THE FOURTH DAY OF NOVEMBER, A.D. 2003, AT 12:32 O'CLOCK P.M.

A FILED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS.



*Harriet Smith Windsor*

Harriet Smith Windsor, Secretary of State

0234821 8100

AUTHENTICATION: 2728609

030706660

DATE: 11-04-03

State of Delaware  
Secretary of State  
Division of Corporations  
Delivered 12:35 PM 11/04/2003  
FILED 12:32 PM 11/04/2003  
SRV 030706660 - 0234821 FILE

**CERTIFICATE OF AMENDMENT  
OF THE  
RESTATED CERTIFICATE OF INCORPORATION  
OF  
ONDEO NALCO COMPANY**

Adopted in accordance with the provisions  
of Section 242 of the General Corporation  
Law of the State of Delaware

The undersigned, being the Assistant Secretary of ONDEO Nalco Company (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "GCL"), does hereby certify:

1. That the Restated Certificate of Incorporation of the Corporation is hereby amended by changing Article FIRST thereof so that, as amended, said Article FIRST shall read in its entirety as follows:

"FIRST: The name of the Corporation is Nalco Company."

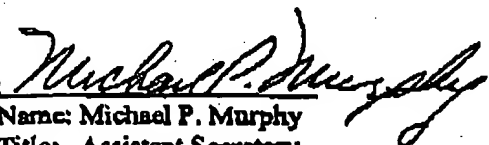
2. That the foregoing amendment of the Restated Certificate of Incorporation of the Corporation has been duly adopted in accordance with Section 242 of the GCL.

3. That the Board of Directors of the Corporation duly adopted resolutions setting forth the foregoing amendment, declaring said amendment to be advisable and referring such amendment to the stockholders of the Corporation for consideration thereof.

4. That the foregoing amendment has been duly approved and adopted in accordance with the provisions of the GCL by the written consent of the sole stockholder of the Corporation on November 4, 2003 in accordance with the provisions of Section 228 of the GCL.

IN WITNESS WHEREOF, the undersigned has caused this Certificate to be signed this 4th day of November 2003.

ONDEO NALCO COMPANY

By:   
Name: Michael P. Murphy  
Title: Assistant Secretary